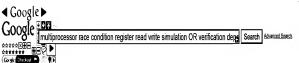
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#### 1. Parallel computing - Wikipedia, the free encyclopedia

The third and final condition represents an output dependency: When two ... This is known as a race condition. The programmer must use a lock to provide mutual exclusion. .... EX = Execute, MEM = Memory access, WB = Register write back) .... A symmetric multiprocessor (SMP) is a computer system with multiple ... en wikipedia org/wiki/Parallel computing - Cached - Similar

#### 2. [PDF] Testing Closed-Source Binary Device Drivers with DDT

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by V Kuznetsov

For the purpose of access verification, DDT treats the ... driver would register open, read, write, and close ..... Various race conditions with interrupts while playing audio.
Intel Pro/1000 .... the about its expected behavior, DDT may find bugs that ... dependencies through the path leading to a bug, DDT ...
infoscience epfl chirecord/147243files/ddt.pdf

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Core dumps are expected to contain a complete snap-..., program is that the write to x at 7 and the read at 11 are not atomic; thus, there is a race between ...... a CSV); we have yet to see such conditions in the bug reports we have examined .... Execution Replay of Multiprocessor Virtual Machines. In VEE, pages ... www.sc. purudue eduhimensistures/hippers/saps/s10.011

#### 4. raw - Secure source code hosting and collaborative development ...

NBIO: NBIO may have partially completed - e.g., read of 4096 may return ... with -1 Multiprocessor Support for Event-Driven Programs (Zeldovich's masters work, .... map in private memory as read-write (multi-threaded, so multiple may be ... user provides hints about file system operation dependencies to let FS ... giftub.com/yang/notestraw/\_/Systems.page - Cached

#### 5. Instruction-Set Simulation and Tracing

Jun 8, 2004 ... There is also a simulators mailing list. To subscribe, write to <majordomo@xsim.com> .....registers and an eighth slatus register that includes condition codes, .........Multiprocessor simulation may cause higher miss rates in the .... parallel execution of IU and FPU and operand dependency stalls ... www.xsim.combibinderst dilines him! Cached - Smilar

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Whenever any processor issues a read or write request prior to a sample point, ..... race conditions. We use 100000-instruction measurement samples, ...
orouss, ssail mit edul/cap/scale/bapers/kbarr-phd.odf

#### 7. English Arabic Technical Computing Dictionary

... Function, Functional, Functional database, Functional dependency, Functionality, .... Read-eval-print loop, Readme, Read-only, Read only, Read-write, ... Real-time, Real-time, Studiered analysis, R Race condition, ... Symmetric multiprocessing, Symmetric multiprocessor, Sync, Synchronize, ... www.dosoto.com/\_Functionals/-table/studiered-bicknam/-Cashed

#### 8. Specification-driven functional verification with Verilog PLI ...

Lan 28, 2007. — 5.2 Ruby expression that determines whether all registers .... of a scalable multiprocessor\* and was found to have a 10% performance penalty, ... VPts inherent dependence on simulator-driven functional verification were ...... (2) it has synchronization issues such as race conditions-which further ... snk tunfamily orgothymasters thesis html - Cached - Similar

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The advent of only multiprocessors (GMPs) has moved parallel programming ... system compares the read and write sets of all concurrent transactions. .... certain race conditions, resolves the situation in which at transaction with TID ..... printed in a file when the execution finishes using the dump function. ... upcommons upoc editoficibitstream/2099.17464H/5862b.ddf

#### 10. IPDFI The MCP Model Checker

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checker for state machines that supports compositional verification [5,6]. Our .... write to non-thread-local memory, though certain MCP API calls may also ... -heuristic switch is not given, MCP ignores calls to mor register heuristic), .... encounter the race condition, so xxx always takes the value 444. ... tiarc.nasa continuouth 13/2/h/13/2/M20/Thompson %205b lodf

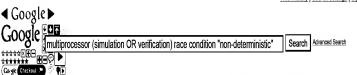
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cally using non-deterministic automata. The inherent non- determinism implies that when implemented in .... memory accesses, which inevitably produces race conditions. ..... verification of multiprocessor systems.\* Computers and Com-... www.stanford.edu/~shacham/pubs/micro08-rsb.pdf - Similar

#### 2. [PDF] Evaluating Non-deterministic Multi-threaded Commercial Workloads

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by AR Alameldeen - 2002 - Cited by 60 - Related articles

Feb 2, 2002 ... Ruby to capture timing-dependent race conditions and .... acteristic in shared-memory multiprocessor simulation ... www.cis.upenn.edu/~milom/papers/caecw02 workloads.pdf - Similar

# 3. IPDFI Output-Deterministic Replay for Multiprocessor Programs

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Replay data races without annotation. • Found in many apps, benign or erroneous .... Includes all non-deterministic data: e.g., thread ... (Verification Condition., Floyd '67), 2. Solve for the unknowns using a formula solver ...

www.sigops.org/sosp/sosp09/slides/altekar-slides-sosp09.pdf - Similar

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has been to record the non-deterministic execution. Exist-ing recorders, however, either work only ...... execution-driven multiprocessor

simulation. We obtain the ..... What are Race. Conditions?: Some Issues and Formalizations, ACM ... www.cs.wisc.edu/multifacet/papers/isca03\_flight\_data\_recorder.pdf

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processor deterministic replay in general and memory race recording in particular. ... episodes E and F in an execution, the no-conflict condition of Equation 1 must hold. .... simulator configuration matches the baseline shown in Ta-..... Evaluating non-deterministic multi-threaded commercial workloads. ...

iacoma.cs.uiuc.edu/iacoma-papers/cacm highlight09.pdf

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effects and race conditions, it does not compromise overall memory consistency. .... by multiprocessor simulation, allowing simulation with ..... Xen) and non-deterministic parallel cache simulation (as in. Sparc-sulima). ...

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enumerate all race conditions with the current exec timek assignments. 8: for all permutations of events in superset R do. 9: call discrete event simulation ...

www.engr.colostate.edu/.../pubs/.../2009-MPDA IEEE TII-PasrichaGabe.pdf

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conditions happened. In heterogeneous systems which tasks have different time constraints algorithm have to avoid .... Speed and Race. After that, fuzzification is applied to the .... Simulation results show that by increasing the number of .... non-deterministic heterogeneous computing systems." in Proc. IEEE ...

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of preemptive multi-processor systems is undecidable using ... namics of events, race conditions, and the non-deterministic execution order of tasks. ...

ieeexplore.ieee.org/iel5/4840551/4840552/04840586.pdf?arnumber...

#### 10. Microprocessor Verification Blog

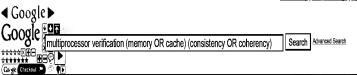
The goal of multi-processor verification, simply put, is to find errors that ... Non-deterministic true-sharing is the most complex mode of sharing and ...

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## 1. [PDF] Multiprocessor Memory Model Verification

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verifying memory consistency. In SPAA'05: Proceedings of the 17th Annual ACM Symposium on ... Defines a "memory order" for each multiprocessor execution. ...

fm.csl.sri.com/AFM06/slides/Loewenstein-MemoryModel.pdf - Similar

## 2. [PDF] SPAA05 - MH05: Efficient Algorithms for Verifying Memory Consistency

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Memory consistency models, Multiprocessor verification,. Sequential Consistency, Total Store Order, Vector Clocks. 1. INTRODUCTION. The memory consistency ...

citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.112... - Similar

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by S Qadeer - 2003 - Cited by 32 - Related articles

K.L. McMillan and J. Schwalbe, "Formal Verification of the Encore Gigamax Cache Consistency Protocol," <> Proc. Int'l Symp. Shared Memory Multiprocessors ...

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[17] S. Qadeer, "Verifying sequential consistency on shared-memory multiprocessors by model checking," IEEE Transactions on Parallel and Distributed ...

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www.hpl.hp.com/techreports/Compaq-DEC/SRC-RR-176.pdf

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by P Chatterjee - Cited by 15 - Related articles

Formal specification and verification of memory consistency models of shared memory multiprocessors. Master's thesis, Univ Utah, School of. Computing, 2002. ...

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Multiprocessor, or MP, verification revolves around memory accesses. ... interactions between caches of the various processors, eliminating cache coherency ...

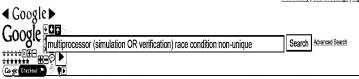
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unusual case), then a non-atomic load can read a value ... cution of a test even in the face of race conditions such as the ones described above. .... "Multiprocessor design verification for the PowerPC? 620 ... doi.ieeecomputersociety.org/10.1109/CMPCON.1996.501801 - Similar

## 3. Race condition ordering and functional verification system and ...

Method and apparatus for creating a multiprocessor verification environment ..... the functional model sends a set of unique identifiers (e. g., ... In operation, the system for ordering race condition events according to the present ...

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on a variety of multiprocessor systems, including but not limited to a CMP ... We evaluate our race recorder with full-system simulation of a CMP system ..... example, the slicing plan is not unique. Bacon and Goldstein proposed a .... order) execution with minimum context switches, so that a race condition can be ...

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The caches are non-blocking and can be accessed with multiple outstanding misses. The sys-.... Some of these activities are not unique to multi-processors. However, the increased traffic ... allel programs have race conditions, which occurs when ..... uation Using a Multiprocessor Simulation." ACM Trans. Com-...

ieeexplore.ieee.org/iel1/2/11797/00544237.pdf?arnumber=544237

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implemented with multiple threads and runs on a multiprocessor system, ..... advance the simulation, a run command is issued to the scheduler, which causes ..... state of one unique bit in the vector. Thus, no race condition can occur. ... digital commons unled u/culview content cgi?article=1036&context...

#### 7. TechOnline | Complete SoC Design, Verification Reign at DAC Exhibits

... non-compatible design-for-test (DFT) schemes, different reset techniques, and preferred ... You can also detect problematic race conditions and combinatorial loops at the ... The tool has a unique physical-modeling capability at RTL, .... The new release of HUB includes a multiprocessor simulation capability to ...

www.techonline.com/showArticle.jhtml?articleID=192200380 - Cached

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[0009] Verification of multiprocessor designs present special ... non-unique results in multiple resources under conditions of non-unique result propagation ...

www.freepatentsonline.com/y2003/0130831.html

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Using a Multiprocessor Simulation Model. JAMES ARCHIBALD and JEAN-LOUP BAER .... This prevents a possible race condition if a cache does ..... determined using a least recently used (LRU) stack (unique for each processor). ... citeseerx ist.osu.edu/viewdoc/download?doi=10.1.1.18.8940...

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Jan 16, 2002 ... validation runs on a Sun Enterprise 4000 multiprocessor ..... to a shadow copy of each variable unique to each thread to provide ... We refer to this data layout strategy as non-merged. .... memory consistency models, such race-conditions are only ... Table 4: Machine parameters used in simulation. ...

www.jilp.org/vol3/rundberg-jilp.pdf

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Assura physical verification cannot address a file larger than 2 Gigabytes. ... To run Assura DRC, LVS, or RCX in parallel on a multiprocessor system, place? ... A dependency graph consisting of rule queues is built from the dependencies in .... The default memory allocation is based on internal testing of larger ...

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long trace files. Most importantly, in comparison to a TSOtool-like checker ..... not have been found using race-free or self-checking test vectors. ..... verification of multiprocessor systems," Computers and Com- munications, 1995. ...

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Live targets (local and remote) and dump files ... with Hyberfile, with a multiprocessor device and multicore devices, .... This testing includes metadata verification and a dependency check to verify that ... USB Boot, and Registry Filter (RegFit) are Embedded Enabling Features in Windows Embedded Standard 2009 ...

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the Intel Pentium Pro's manipulation of control registers. [11]. Similarly, the Pentium 4 uses recovery to .... directory protocols can handle this race, but doing so adds ..... We use a repository of 2000 files (totalling ~50 MB). .... Verifying a. Multiprocessor Cache Controller Using Random Test. Generation ....

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verification: it also justifies the choice of Lotos as a specification language .... Consequently, the complexity of the Rcc described in Vhdl register transfer level was ...... Therefore, a test consists in a collection of input files, ...

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theorem to this effect, for an x86-specific notion of race. The axiomatic style of definition is relatively easy to ...... to a code for the 32-bit register r32, followed by a 4-byte ..... served) data dependency from each instruction to the next, .... that is not exercised by testing or verification with respect ...

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shared memory dependencies than is needed to guarantee deter-ministic replay, then recovers and .... long as their system output and the program memory and register ..... synchronization or data race. Respec performs a divergence check ..... the data necessary for performance at user-level, the verification of ...

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